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P. 18/18


**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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08/443,204 05/18/95 GARDNER

C 95-004M
EXAMINER

MARK. N.

3111/0930

ART UNIT	PAPER NUMBER
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9

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DATE MAILED: 0106

09/30/96

 This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire _____ month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-25 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☐ Claim(s) _____ is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☒ Claims 1-25 are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☐ Notice of Reference Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

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- SEE OFFICE ACTION ON THE FOLLOWING PAGES -

PTOL-326 (Rev. 10/95)

* U.S. GPO: 1995-409-200/40029

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low, the control switches to a second mode in which power from the engine is transferred to the generator.

It would have been obvious to program the control circuit of Ellers to always connect the engine to the generator during the cruise mode off condition in order to maintain a fully charged battery. With respect to claim 50, since the cruise mode is set only when the vehicle has reached a predetermined speed, it would have been obvious to activate the cruise mode only after a predetermined period of time in which rapidly shifting power and speed demands have not occurred in order to provide a consistent speed for the cruise mode. With respect to claim 51, since Ellers teaches using the engine to drive the generator whenever the charged state of the battery is too low, it would have been obvious to activate the engine for charging the battery, even during periods of low speed when the electric motor is used to power the vehicle.

12. Regarding claims 34, 35, 37, 40, and 50-54, Philip C. Malte states:

Reading of Ellers (#4,923,025) strongly suggests the Internal Combustion Engine (ICE) does not come into play (i.e., does not drive a set of wheels) until the vehicle has reached a desirable highway cruising speed, such as 55 mph. At this point, the electric drive of a set of wheels is shut off. Thus, at about 55 mph and above, the ICE will drive the vehicle, and below about 55 mph, the Electric Motor (EM) will drive the vehicle.

The claims of Gardner involve a cruise mode condition. The cruise mode condition consists of a desirable vehicle speed and a desirable steadiness of vehicle speed and power. This is much different than the desirable highway speed of Ellers. Gardner allows the ICE to come into play at urban driving conditions, not just highway driving speed. An example of the Gardner condition would be urban driving at about 40 mph vehicle speed. Additionally, Gardner requires a steadiness of operation in order for the ICE to drive the vehicle. This will allow a relatively small ICE to be used. Ellers, on the other hand, never mentions

steadiness of operation. Furthermore, by Ellers, one would be strongly inclined to use a fairly large ICE, since it will be used for all running above about 55 mph – though the ICE could be aided by the re-energized electric motor for a high rate of acceleration of the vehicle on the highway. It is quite unlikely the ICE of Ellers will operate with as high of efficiency as the Gardner ICE, and it is unlikely Ellers' ICE will yield as much reduction in vehicle emissions as Gardner's ICE.

Reading of Ellers strongly suggests charging of the electric-drive battery by the ICE only occurs when the battery, on 6-volts basis, has a voltage of less than 5.25 volts. This is a significant drawback of the Ellers system. This drawback is brought out by the statement in Ellers: "It has been found that if the vehicle of the present invention is driven approximately 30% of its mileage over 55 mph (on ICE) the batteries would never need charging from an outside source." Gardner overcomes this difficulty. That is, the ICE is used to charge the batteries when the vehicle is in cruise-off mode condition. Gardner proposes a significantly more robust electric-drive battery recharging system. It is unlikely Gardener's system will require external charging, even if the vehicle is driven primarily in the urban environment.

13. Conclusion

In my opinion, the definitions discussed by the Examiner in 11 are not obvious to those of ordinary skill in the art of automotive power plant design. It is not obvious the highway speed condition of Ellers should be broadened to include urban driving speeds and steadiness of operation. It is not obvious the electric-drive battery charging method of Ellers, in which the battery is charged by the ICE only when the electric-drive battery falls below 5.25 volts, should be replaced by a system that charges the battery when the vehicle is operating below the cruise speed condition.

Further, affiant sayeth naught.

Dated: 12/9/99

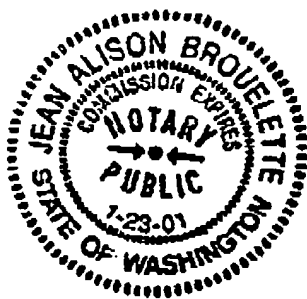
Philip C. Malte

Philip C. Malte

STATE OF WASHINGTON)

COUNTY OF KING) ss

Subscribed and sworn to before me this 9th day of December, 1999.



Jean Alison Broelette
Notary Public

My Commission Expires: 01-23-01